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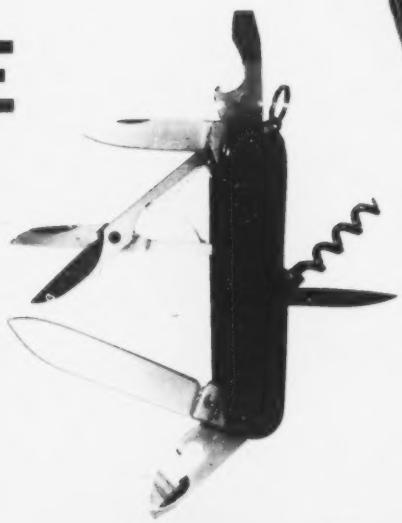

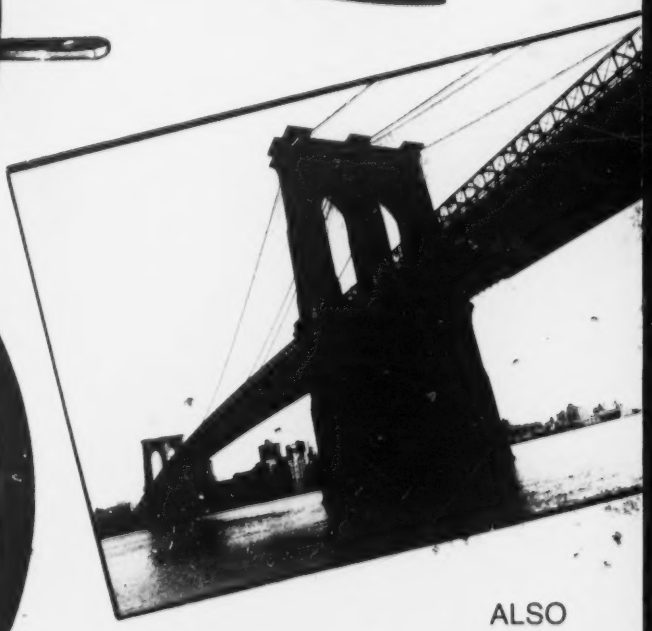

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VOLUME 30 NUMBER 7
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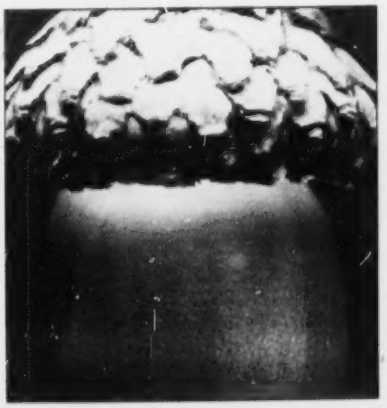

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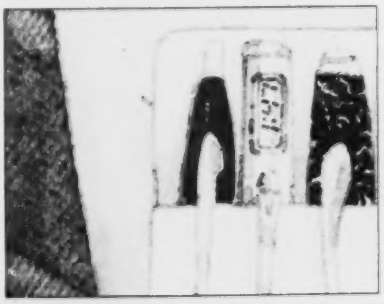

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The big machines continue to grow as they are called upon to service data-hungry personal computers.

SURVEYING THE MAINFRAME LANDSCAPE

by John W. Verity

The personal computer, particularly as sold by IBM, continues to gain importance in the mainframe data processing world, accounting for a growing amount of revenues for manufacturers and forming the basis for many user-oriented applications. While IBM enjoys increasing acceptance of its PC as a de facto standard in the corporate sector, its mainframe competitors are finding mixed success in trying to penetrate the all-important, high-growth pc/office systems markets.

According to the 1984/85 computer market survey, researched for the 12th year by Cowen & Co. in conjunction with DATAMATION, the IBM PC will capture three quarters of respondents' planned personal computer purchases during 1984, up from a commanding three fifths of last year's unit purchases. Apple's share of respondent unit purchases will shrink to 6.7% from last year's 18.5%, according to the survey results.

The survey comprises responses from 4,993 U.S. and Canadian user sites received prior to Feb. 29, 1984. Increased observation of telecommunications, personal computing, and software trends were made in this year's survey. In addition to a penetrating look at IBM mainframe sites, the survey detailed spending and procurement trends at Sperry, Burroughs, NCR, and Honeywell shops.

Some major conclusions can be drawn from this year's survey results:

- IBM has found great success with its System/36 midrange machine, the Personal Computer, and increasingly so with its new 4361 and 4381 systems.
- Plug-compatible manufacturers (pcms), both in the cpu and peripherals markets, offer little threat to IBM, despite gains they have made in the 3380-class disk arena.
- In general, large-scale system users are showing the biggest appetite for additional computing capacity, a good portion of which

FIG. 1

NON-IBM USERS NEED MORE INDUSTRY APPLICATIONS SOFTWARE

Query: Which category of service needs the most attention by your vendor?

	MOST FREQUENTLY CITED CATEGORY			
Industry served	**Honeywell**	**Sperry**	**Burroughs**	**NCR**
Manufacturing	Applic. software	Applic. software	Applic. software	Applic. software
Wholesale/Retail	Applic. software	Applic. software	Maintenance	Applic. software
Financial Instit.	Applic. software	Applic. software	Applic. software	Applic. software
Service Bureaus	Sales personnel	Applic. software	Maintenance	Systems engineering support
Education	Applic. software	Applic. software	Applic. software	Applic. software
State/Local Govt.	Applic. software	Applic. software	Applic. software	Applic. software
Federal Govt.	Applic. software	Operating systems software	Systems engineering support	No mention

is being fueled by demands placed on mainframes by the growing pc population.

- Applications software is generally the weakest point for non-IBM mainframe suppliers, according to users.
- IBM is garnering an increasing share of distributed processing and office systems installations, even at sites that are using non-IBM mainframes.
- High-end Sperry users are apparently convinced the manufacturer will finally be able to deliver its long-promised but delayed 1100/90 mainframe.
- A warm reception for NCR's 9000 series of machines is expected, but demand for the Convergent Technologies-built NCR Worksaver may be on the wane.
- Pent-up capacity demands among Burroughs users look strong, boding well for the company's order rates into 1985.

Among IBM mainframe users, the industry leader is enjoying continued strong demand for its products, particularly among large-scale users who are nearing capacity on their 308X mainframes, according to the survey. While the results of the survey were tabulated before IBM's March mid-life kicker to the 308X series, the 308XX machines, the survey shows a strong outlook for the 3084 segment. Following last September's introduction of the 4361 and 4381 cpus, respondent demand appears strong for those machines. Indeed, the 4381 is perceived as siphoning away orders from users who would previously have ordered 3083 computers.

Despite the aging of the 308X product life cycle—a follow-on line of mainframes code named Sierra or Trout is expected to be unveiled by early next year— the vast majority of 308X machines are being booked as purchases. In terms of dollar value of 308X installations planned for the following 24 months, users said they would purchase 44%, lease 8% from IBM Credit Corp., lease 33% from third-party lessors, and lease 11% from IBM on a long-term basis. That leaves only 2% renting machines from IBM. IBM Credit Corp's portion of that overall 308X activity is up from 3% in last year's survey, but still substantially below that of third parties.

As for 4300s, on a similar dollar value, 24-month basis, 45% of the machines will be purchased, 9% leased from IBM Credit, 31% leased from third parties, 10% leased from IBM for two years, and 2% rented from IBM. (About 3% of the 4300 machines will be purchased on the used computer market.)

Last year saw a substantial shift from lease to purchase, particularly in the IBM installed peripherals arena, where, for instance, only 17% of survey sites were renting or leasing disk drives directly from IBM, compared to the previous year's comparable figure of 47%. Similar shifts were seen in add-on memory—to 12% from 31% leasing or renting from the parent corporation—and in terminals, where last year's figure of 53% dropped to only 17%.

Disk drives and terminals were seen as showing the strongest procurement activity among respondents, with almost 40% of respondents planning to acquire products this year in each category. Comparable figures for tape drive and add-on memory hovered in the 12% range.

The presence of plug-compatible manufacturers' gear at IBM installations is seen as fading, particularly in the add-on memory area where only 15% of medium to large sites indicated pcm products installed. The comparable 1981 survey showed add-on memory at 42% of the survey sites.

In the disk business, IBM is clearly dominating all activity, despite an uptick in pcm shipments after delays in getting 3380-type thin-film drives to market in volume. Survey respondents indicated that about 63% of their outlays for 3380 disk would go to IBM; Storage Technology captured 10%, Memorex 4%, and Control Data only 1%.

IBM LEADS IN TAPE DRIVE BIZ

The tape drive business, too, shows IBM in command, although the survey was conducted too early to gain any knowledge of how users would react to the new IBM 3480 tape cartridge drives introduced in March. IBM was seen as shipping 46% of the total tape drives to be ordered by respondents in the 1984-85 period, followed by a strong Storage Tech with 40%, Memorex with 4%, and Telex with 2%. Storage Tech's share of the tape drive market was seen as particularly high among high-end users (3033/308X) where it had a 56% share of the add-on market, compared to IBM's 36% share.

In add-on memory, IBM's pricing pressure has given it an 82% share, compared to 4% for Amdahl, 2% each for National Semiconductor and Storage Technology, and 1% for Control Data. Intel, which has held a 10% share in the 1980 mainframe survey, has apparently been squeezed out of the picture altogether.

In the terminals add-on market, respondents said that 60% of their acquisitions would be for IBM products, 8% from Telex, 6% each for Raytheon and ITT Courier, 2% for Memorex, and 18% other for unspecified. When asked if they expected to need additional system capacity by year-end 1984, respondents showed a slight increase in need compared to last year's survey. For instance, 26% said they would need to upgrade to larger cpus, 8% said they would need to install additional cpus, and 27% said they would have to add main memory or peripherals. Comparable figures from last year's survey were 25%, 7%, and 27%, respectively.

Among high-end users, however, even more demand for additional capacity is expected. Among 3081 and 3084 sites, 23% expect to need additional cpus and 36% to need to upgrade installed machines. The stage appears set for IBM's introduction of a new line of higher-performance mainframes.

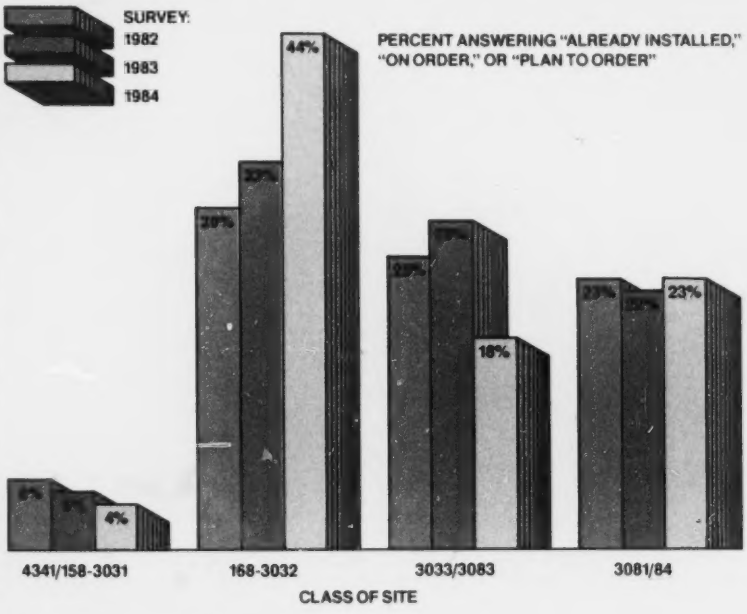
As seen in successive surveys over the past five years, the installation activity in 308X class machines appears to have crested and (in dollar terms) is being taken over by 4300s, particularly the 4361 and 4381. Looking ahead 24 months, respondents said they would spend 69% of their dollars on 308X machines, and 30% on 4300s. Last year's comparable figures showed 77% of the dollars going to 308X systems and 18% going to 4300s.

Meanwhile, the PC is expected by respondents to capture 21% of the dollars spent on dp systems compared to 79% on IBM mainframes. Last year those numbers were 7%

FIG. 2

PCM PROSPECTS

Query: What consideration has your organization given PCM cpus (e.g., Amdahl, NAS) as an alternative to your IBM cpu(s)?

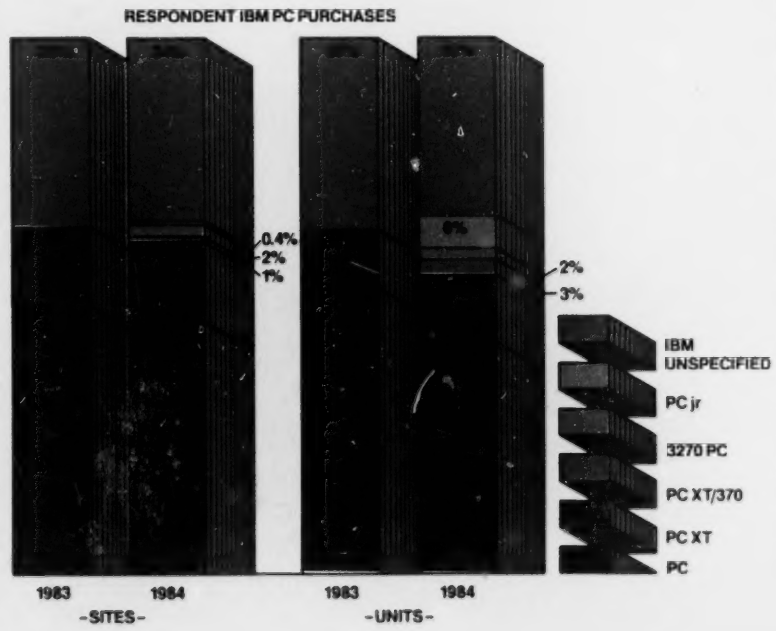


Note: Negligible impact in 4300 segment of IBM line

FIG. 3

IBM'S ORIGINAL PC VS. OTHER IBM MICROS

Query: How many personal computers were purchased by your organization during 1983 and how many are planned for 1984?



CHARTS BY PAUL GOODFRIEND

and 93%, respectively.

Personal computer purchases are coming most strongly from users in manufacturing and education SIC sectors, followed by government and business services. Standardization at the corporate level is found most evident in larger organizations; 70% of organizations with revenues of over $250 million a year have standardized on one or two pc suppliers, compared to the overall survey portion of 61%.

At the current rate of growth, therefore, the PC could easily catch up with mainframe shipment values in a few years. In fact, as a fraction of the annual incremental revenue growth experienced by the corporation, the PC is already close to matching the mainframe product line. On the other hand, pcs are seen as fueling mainframe demand because of the increasingly popular micro-mainframe links users are installing.

IBM's already imposing share of pc shipments to survey respondents is expected to rise even further in the coming year. The company accounted for 62.8% of all installed machines at the end of 1983 and was expected by users to account for 75% by the end of 1984. Comparable figures for Apple Computer, the next leading vendor in the corporate marketplace, are 18.5% last year and only 6.7% this year. Tandy's share was seen as dropping from 2.5% last year to only 0.5% this year, while Compaq, Wang, and HP showed slightly more significant standings.

Among the IBM PCs being acquired by survey respondents, the original model still accounts for the largest fraction of shipments, at least 43%. Following it are the XT model, with 13% of planned 1984 acquisitions, PCjr, with 6%, and the XT/370 with 3%. Fully a third of the IBM PCs mentioned by respondents were left unspecified.

Standardization on one or two brands of personal computer was more evident than ever, with 61% of the responding sites having made such a commitment. Survey results showed that the larger the organization the more likely standardization has become. Of those corporations standardizing, the IBM PC family was by far the most common choice, accounting for 72% of the mentions. Apple came next with 9%, followed by Digital Equipment with 3% and Tandy with 2%.

DDP CONTINUES TO EXPAND

Distributed processing, a concept more than a decade old, continues to expand among survey respondents. Looking ahead 24 months, almost two fifths of the respondents said they would have distributed processing systems installed, up significantly from the one quarter of sites currently involved. IBM's share of that business was seen as increasingly strong, ris-

ing to 83% of the expected shipments during 1984/85. Interestingly, Datapoint, once a leader in the business, was not mentioned for future installations. It has apparently suffered greatly at the hands of an aggressive IBM.

IBM, too, is gaining a strong share of the office automation business, being mentioned as the main OA supplier by just over half the sites planning to build mainframe-based OA systems. Use of the company's PROFS and DISOSS office systems, each of which runs on mainframe computers, was also found to be growing significantly among survey respondents.

In connecting office machines together, the local area network was found to be the leading choice over PBX systems, although only by a slight margin. Rolm's share of planned PBX installations was found to have taken a good-sized jump among IBM sites, apparently reflecting user confidence in the Rolm-IBM partnership which was disclosed since last year's mainframe survey. Of the PBXs to be installed at IBM sites, about one half are expected to come from Rolm, compared to 28% from AT&T and 10% from Northern Telecom. Last year's survey showed Rolm with only a 29% share of installed PBXs.

Usage of IBM's SNA continues to grow, penetrating almost a third of the IBM sites surveyed and expected to hit another 11% in the following two years. SNA was found to be particularly popular at large organizations.

Similarly, database management software finds its widest use among large sites while smaller sites (370/135-4341 range) show the largest growth rate for DBMS usage. The three winners in the DBMS marketplace appear to be Cullinet, Applied Data Research, and IBM, the latter selling its SQL relational package with significant success. IBM's IMS, however, is still the single most used DBMS package among IBM respondents.

As has been seen in previous surveys, a rising percentage of the total data processing budget—some 11.3% in this year's survey—goes for outside software packages. IBM was found to be capturing about 65% of those software expenditures, a figure showing little change from previous years.

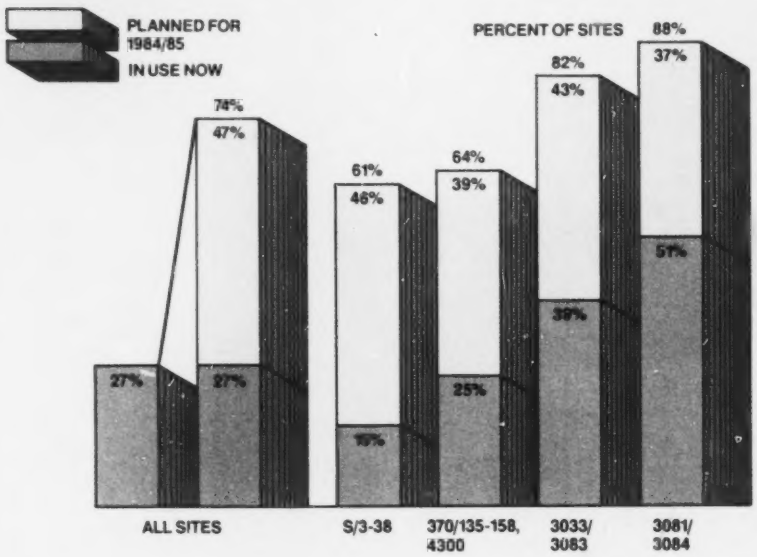
Conversion to the industry leader's MVS/XA operating system, which was first shipped in late March 1983, as a major extension to the decade-old MVS, is continuing strongly. While only 7% of responding MVS sites said they already use the software, a third said they would install it in 1984 or 1985. As expected, larger machine sites were more eager to install MVS/XA.

Turning to non-IBM sites, the appearance of high-end machines from such vendors as Honeywell and Sperry has apparently dampened, at least in the short term, growing

FIG. 4

MICRO–MAINFRAME LINKS

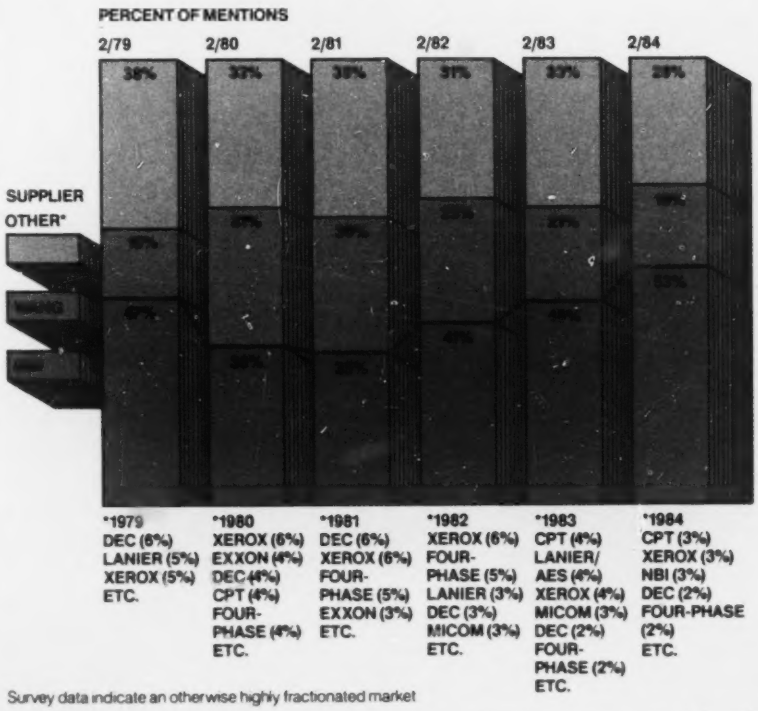
Query: What if any plans do you have for interconnecting personal computers with your mainframe system(s)?



*66% compound user base expansion

FIG. 5

WP/OFFICE SYSTEMS PROCUREMENTS



Survey data indicate an otherwise highly fractionated market

user dissatisfaction. At Burroughs, for instance, only 16% of large systems users said they were seriously considering making a vendor switch, compared to 19% last year. At Sperry, the figures were 12% this year, down from 19% last year. At Honeywell, however, 30% of the users said they may switch, up from 24% last year.

Of those seriously considering making the switch, over half said they were looking to "the IBM world" for the future. In fact, 63% of those large system sites considering a switch picked IBM or an IBM pcm as a likely future supplier, followed by 16% citing DEC.

The lack of trained applications programmers for non-IBM mainframes was the most often cited reason in considering a switch to another vendor—in the case of large Sperry users, 56% complained of that lack.

However, survey data showed still relatively modest amounts of actual vendor switching activity by users. Competitive displacements seem to take place primarily in older, heavily purchased lines of small-scale equipment, although some switching has begun to take place in larger systems where IBM is seen as taking business from all vendors.

Burroughs users showed a continued warming to their supplier, a trend which has been noted in the annual survey for three years running now. The biggest shift was seen among distribution and government users while those in the educational market showed a negative shift in their sentiment toward the Detroit mainframer. Apparently, Burroughs efforts in concentrating on specific lines of businesses is paying off, but users expressed dissatisfaction with the comany's field force activities.

BURROUGHS USERS BUYING

As with IBM, Burroughs is experiencing a major shift to purchasing of its equipment. Among currently installed and planned installations, only 16% and 14% of the system value in dollars respectively are leased—the rest is purchased directly from Burroughs, leased from a third party, or installed under a five to seven year lease from Burroughs.

The largely dormant B6000 user base has apparently been sparked by the recently unveiled A9 machine from Burroughs. Nearly half the ordered A9s indicated by respondents are replacing B6800s and another fourth are being used to upgrade B1900 installations. Few B6900 users are moving to the new A9. Strong deliveries of the B4900 and B7900 are foreseen among respondents to the survey, but it is clear that further product introductions will have to be made to stimulate order rates in 1985.

Burroughs users also indicated that

FIG. 6

PABXS, LANS, OR BOTH?

Query: Which, PABX or LAN, is likely to be emphasized for your future local site data communications?

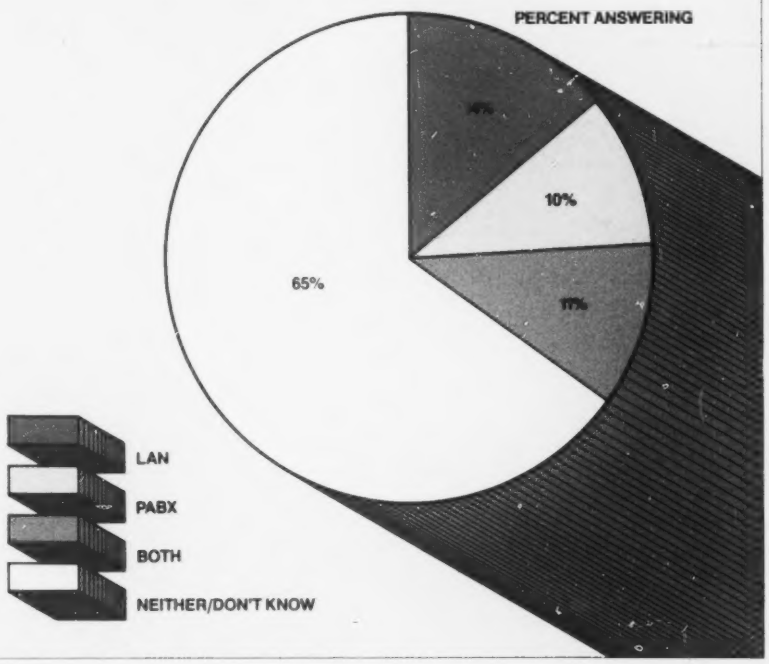
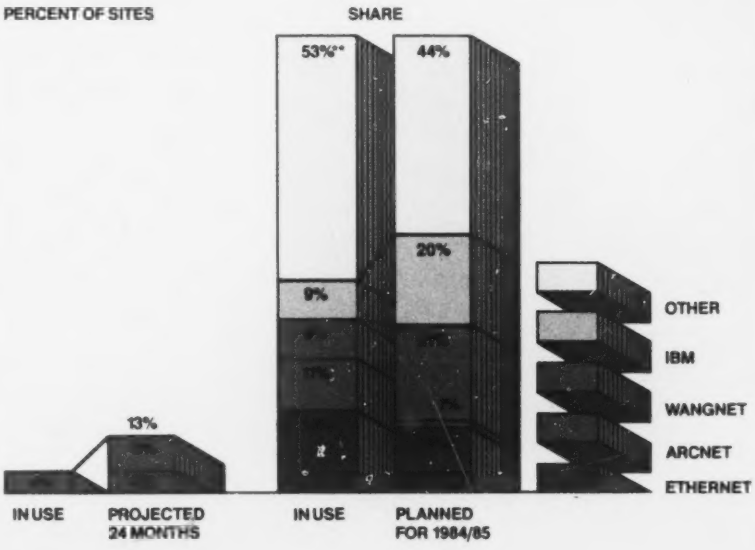


FIG. 7

LOCAL AREA NETWORK MARKET STILL FRACTIONATED

Query: If your organization has installed or plans to install a local area network (LAN), who is the supplier?



*80% compound user base expansion
**Includes Sytek (6%), Corvus (5%, 3% 1984/85), 3 COM (4%), Nestor (4%), Ungermann-Bass (3%, 4% 1984/85)

they are buying the company's B20 workstation, a 16-bit machine manufactured by Convergent Technologies, but little interest has been expressed in the company's in-house developed Ofis 1 office automation systems. The strongest interest in the B20, which can be used as a standalone device or attached to a mainframe as a workstation, comes from B48/4900 and B7000 class users.

Add-on peripheral plans among Burroughs users appeared subdued for the second time in a row, a situation that may result from the relatively high rate of total system shipments in the recent past.

Honeywell Information Systems, which has shown weakness in previous years in delivering large-scale mainframe systems and which recently opted to sell such machines made by NEC in Japan, still has much work to do to satisfy its users' needs. Indeed, the threat of defections away from its user base remains a serious problem. Among large-scale users, 31% said their attitude towards Honeywell became less favorable during the past year, while of those using old, Level 62 equipment, which is effectively dead-ended, 45% said their attitude was less favorable. The most negative feelings were expressed by government customers.

Applications software is the most sensitive issue with Honeywell users, who decidedly rate the company's efforts as inferior to IBM and the industry as a whole. A good portion of the user base, however,—68% of the Level 66 and DPS 8 users, in fact—said they were planning to make the conversion to the new GCOS 8 virtual memory operating system, a conversion that is far from trivial. This faith in the system seems to bode well for future orders of DPS 88 machines.

Planned installations of mainframes was found to be rebounding among all Honeywell users, which means the company will bring in a certain amount of high-margin business, but that activity is still not ebullient. Add-on peripherals business for the coming year was up only a little, with Honeywell losing a significant amount of business to plug-compatible terminal suppliers.

Users are still making much use of the Level 6/DPS 6 minicomputer line as an adjunct to their mainframe installations. Almost half the large systems users said they already have used or will install the small machines. Like Burroughs, however, the company's efforts in the office automation field are finding small acceptance—only 13% of large users said they have installed or will install the firm's office systems.

After a rush of new orders in the second half of 1983, NCR appears to be on its way to a very healthy 1984. In fact, it looks as if the company will have to concentrate on producing and installing equipment rather

FIG. 8

DBMS ON IBM MAINFRAMES

Query: If you are using a DBMS software package on your IBM mainframe(s), which one?

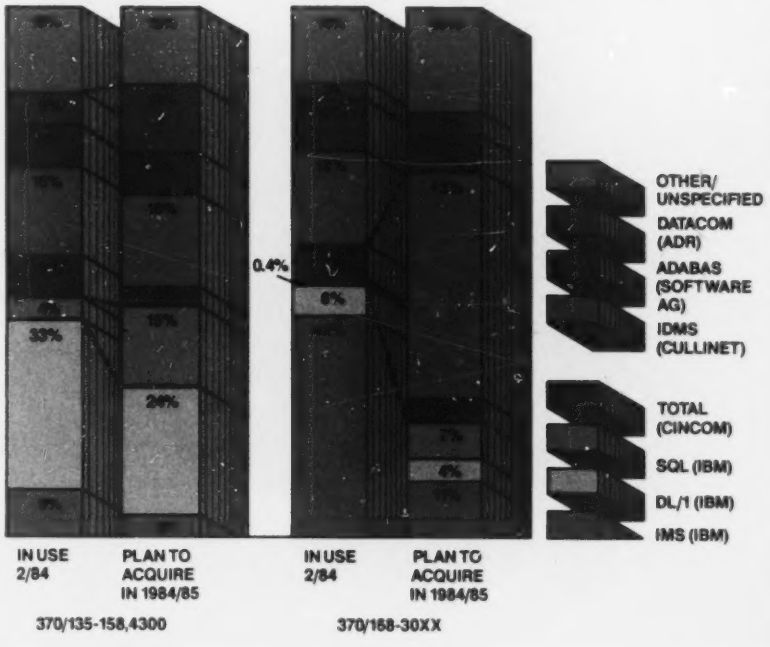
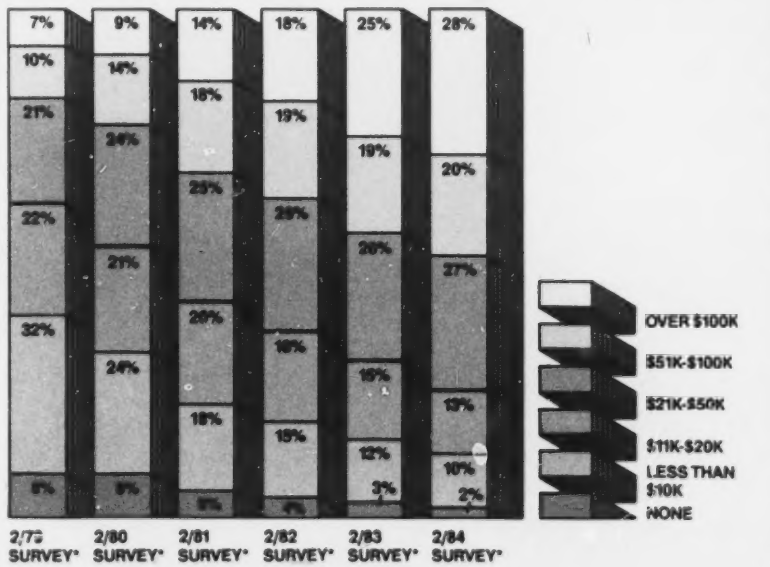


FIG. 9

OUTLAYS FOR PACKAGED SOFTWARE

Query: Approximately how much of your organization's annual dp budget currently goes for unbundled software from IBM and other outside software packages?



*Excludes System/3, 32 and 34, which had not been included in 77/78 survey sample.

IBM capturing 65% of respondents expenditures (66% in 1983 survey, 67% in 1982)

Planned installations of mainframes was found to be rebounding among Honeywell users.

than on seeking out orders. Of particular interest on the rapid takeoff of the new 9000 series of 32-bit machines, which are based on proprietary chips that the company is building for itself and selling on the merchant market. As of the time of this year's survey, fully 8% of the dollar value of the NCR-installed mainframe base was represented by 9000 series machines, which were to be 48% of planned installations.

The strengthening of the economy and the wide range of new products introduced by NCR last year have prompted a burst of installation activity among users. In terms of dollars, users said they would install in 1984/85 equipment worth 24% of their currently installed base. That figure is substantially up from the 11-12% range recorded in previous years. Moreover, the company seems to have begun a reversal of the user base erosion it experienced in previous years.

On the negative side, the firm's Worksaver product line, based on Convergent Technologies hardware, is not faring well among NCR mainframe users. A growing share of those users (some 20% in this year's survey) said they have considered the hardware but have no interest in using it, while a shrinking portion said they are planning to evaluate it. Only 7% said they will install the Worksaver systems. On the other hand, among those NCR users who have standardized on one or two personal computer vendors (a total of 44%), 42% have chosen NCR's Decision Mate systems, compared to 36% choosing IBM.

Sperry, whose high-end customers have been forced to wait while the company works out manufacturing problems in its long-promised 1100/90 machine, is serving a user base whose appetite for additional system capacity took a strong upturn in this year's survey. Looking ahead to 1985, 18% of all Sperry respondents said they would need to upgrade to a larger cpu (up from 12% last year) and 9% (up from 6%) said they would have to install additional cpus. Among large users, the comparable figures were 16% (9% in last year's survey) and 10% (level with last year). Undoubtedly, the resolution of the 1100/90 situation has encouraged users to assess their capacity needs more favorably. A particularly strong need for additional capacity in 1985 was recorded among 1100/60 users, many of whom have had their machines installed for five years or so and who will be installing 1100/70 machines.

The company's Sperrylink office automation system is apparently moving well into the user base, with 16% of all Sperry respondents saying they will install the system and another 23% planning to evaluate it. Among 1100/60 sites, 32% of the respondents said they would install Sperrylink.

Applications software is the most often cited negative aspect of Sperry's offerings when compared to those from IBM. Fully 60% of the users said they found Sperry's applications software inferior to the industry leader's; last year's figure was 53% in that category. While high-end users showed a distinct shift to a more positive attitude in general toward Sperry, those using the dead-ended 90 series machine expressed a new level of disgruntlement. ❁

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